Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1. (Currently Amended) A method for managing data flow ~~estimating the latency of aperiodic tasks~~ in a system with simultaneous scheduling of aperiodic messages and periodic transmissions on a common bus, comprising the steps of:

(a) using predefined periodic transmission times, calculating data transition points between periodic and aperiodic message transmissions intervals for a hyperperiod of interest in said system;

(b) using said data transition points to produce a series of aperiodic latency estimation inflection points;

(c) collecting data points of aperiodic message transmissions for the hyperperiod of interest in said system; ~~and~~

(d) estimating the aperiodic latency probability at an inflection point in the hyperperiod of interest as being equal to the number of sample data points less than or equal to the said inflection point divided by the total number of collected aperiodic latency sample data points, said data points forming a data point plot that is assumed to be linear between said aperiodic latency inflection points; and

(e) transmitting the aperiodic messages based, at least in part, on the estimated aperiodic latency probability.

2. (Previously Presented) The method of claim 1, wherein said data points are plotted on the X axis of a graph and the empirical probability that the latency exceeds the time is plotted on the Y axis of said graph, such that latency estimation inflection points are selected along said X axis for the hyperperiod of interest to visually represent values at which higher

priority periodic message traffic will impact or cause a point of inflection on aperiodic latencies.

3. (Original) The method of claim 1, wherein said aperiodic latency estimation inflection points are formed by binning said aperiodic data points using fluid flow analysis dependent only on the timeline defined by periodic traffic.

4. (Original) The method of claim 3, wherein said fluid flow analysis employes an algorithm.

5. (Previously Presented) A method for managing data flow ~~estimating the latency of aperiodic tasks~~ in a system with simultaneous scheduling of aperiodic messages and periodic transmissions on a common bus, wherein data points of aperiodic message transmissions for the hyperperiod of interest in said system are collected, the method comprising:

using predefined periodic transmission times to calculate data transition points between busy and idle ~~periodic and aperiodic message transmissions~~ intervals for a hyperperiod of interest in said system;

using said data transition points to produce a series of aperiodic latency estimation inflection points;

estimating the aperiodic latency probability at an inflection point in the hyperperiod of interest as being equal to the number of sample data points less than or equal to the said inflection point divided by the total number of collected aperiodic latency sample data points, said data points forming a data point plot that is assumed to be linear between said aperiodic latency inflection points; and

transmitting the aperiodic messages based, at least in part, on the estimated aperiodic latency probability.

6. (Previously Presented) The method of claim 5, wherein said data points are plotted on the X axis of a graph and the empirical probability that the latency exceeds the time is plotted m the Y axis of said graph, such that latency estimation inflection paints are selected along said X axis far the hyperperiod of interest to visually represent values at which higher priority periodic message traffic will impact or cause a point of inflection on aperiodic latencies.

7. (Original) The method of claim 5, wherein said aperiodic latency estimation inflection points are formed by binning said aperiodic data points using fluid flow analysis dependent only on the timeline defined by periodic traffic.

8. (Original) The method of claim 7, wherein said fluid flow analysis employs an algorithm.

9-13. (Cancelled).

14. (New) A system with simultaneous scheduling of aperiodic messages and periodic transmissions, the system comprising:

a bus on which the periodic and aperiodic messages are transmitted; and

a processor operable to use predefined periodic transmission times to calculate points indicating transitions between busy and idle intervals for a hyperperiod of interest in said system; the processor further operable to use said calculated points to produce a series of aperiodic latency estimation inflection points and to estimate the aperiodic latency probability at an inflection point in the hyperperiod of interest as being equal to the number of sample data points less than or equal to the said inflection point divided by the total number of collected aperiodic latency sample data points, said data points forming a data point plot that is assumed to be linear between said aperiodic latency estimation inflection points;

wherein the processor transmits the aperiodic messages on the bus based, at least in part, on the estimated aperiodic latency probability.

15. (New) The system of claim 14, further comprising a display; wherein the processor outputs said data points to the display to be plotted on the X axis of a graph and the empirical probability that the latency exceeds the time is plotted on the Y axis of said graph, such that latency estimation inflection points are selected by the processor along said X axis for the hyperperiod of interest to visually represent values at which higher priority periodic message traffic will impact or cause a point of inflection on aperiodic latencies.

16. (New) The system of claim 14, wherein the processor forms said aperiodic latency estimation inflection points by binning said aperiodic data points using fluid flow analysis dependent only on the timeline defined by periodic traffic.